



Tai Chi Improves Foot Sole Sensation, Balance and Functional Mobility for People with Peripheral Neuropathy

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Introduction

- People with peripheral neuropathy (PN) suffer reduced physical function among other symptoms.
- Tai Chi (TC) training has been shown to maintain and restore physical function in the elderly population.





Purpose

The **Purpose** of this study was to examine the effect of a 6-week (3 one hour sessions / week) Tai Chi training program on the physical function of PN.





Methods - Subjects

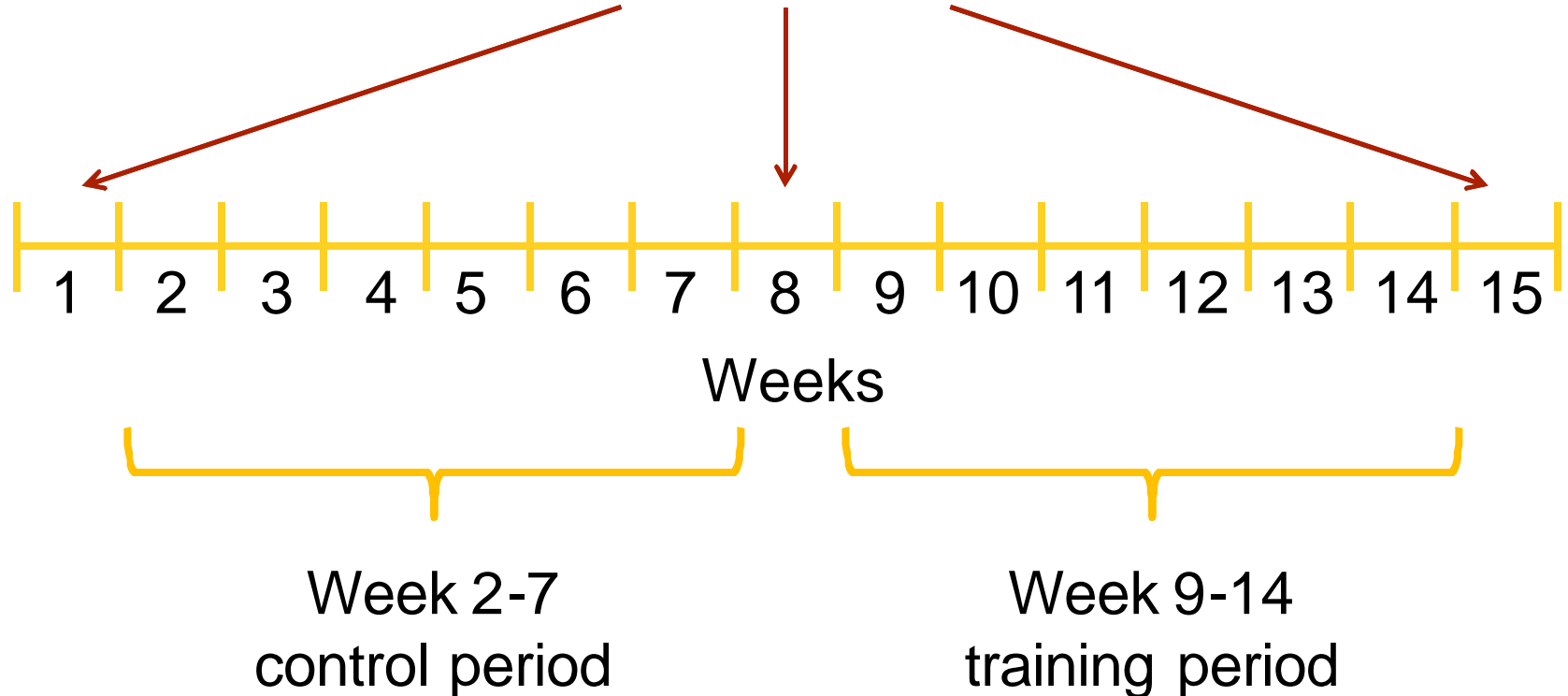
- 6 people with PN were recruited
- Informed consent obtained
 - Age - 71 ± 10 year old
 - Height - 167 ± 12 cm
 - Body mass - 85 ± 29 kg
 - Duration of PN - 6 ± 5 year





Methods - Protocol

Physical Function Testing





Methods – dependent variables

- Sensation (SEN) of 5 foot sole locations was tested by using a 5.07 gauge monofilament.
- Peak torques during maximum isokinetic (60 deg/s) knee extension (KE) and flexion (KF) on a dynamometer were used to examine knee joint strength.





Methods – dependent variables

- Postural balance:
 - average velocity (VEL) and 95% area (AREA) of the center of pressure movement during 5-sec of eyes-closed quiet standing.
- Functional mobility
 - 6-minute walk (6MW) distance
 - Timed Up-and-Go (TUG) time





Methods – Statistical Analysis

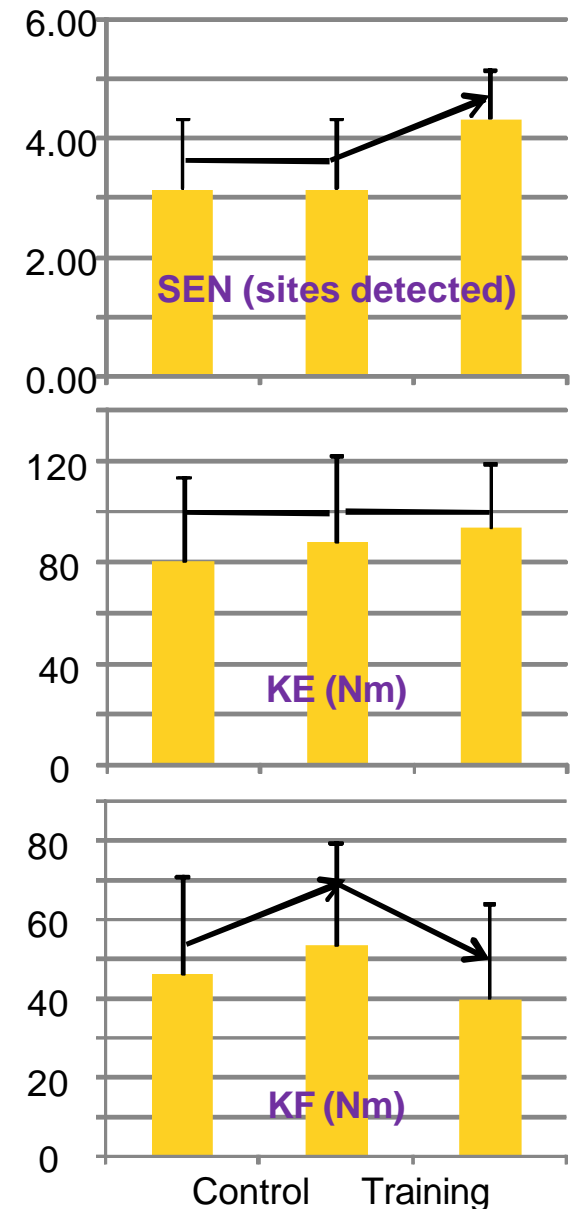
- Changes during the two 6-week periods were compared statistically (one-tail paired T-Test).





Results

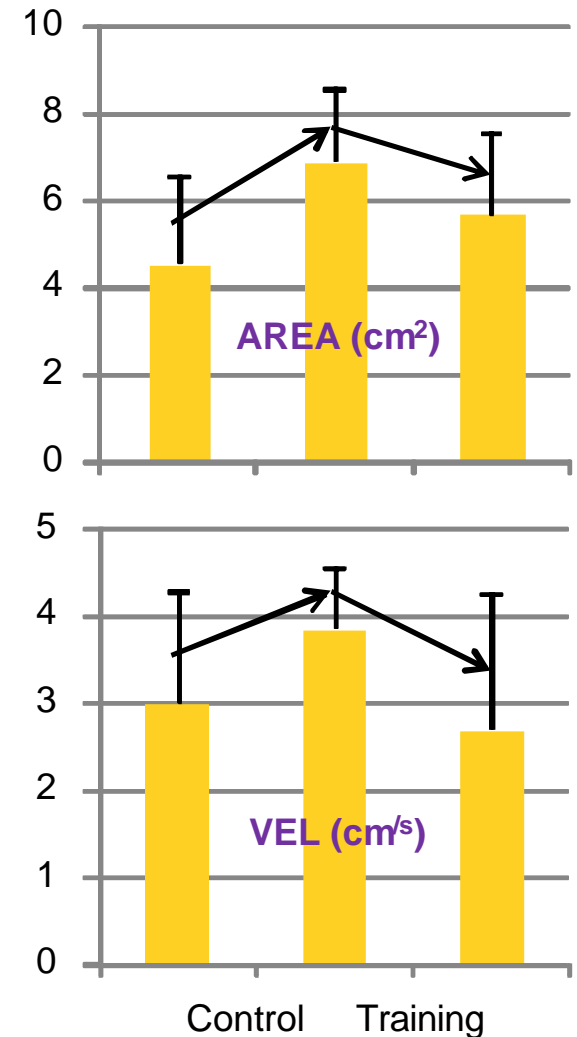
- Tai Chi led to improved SEN (53 ± 64%) compared to control (0 ± 0, $p = .0489$).
- No significant KE change was observed during the experiment ($p = .3468$)
- KF exhibited 15% increase (first 6 weeks) followed by a 25% decrease (second 6 weeks, $p = .0428$).
(Testing effects?)





Results

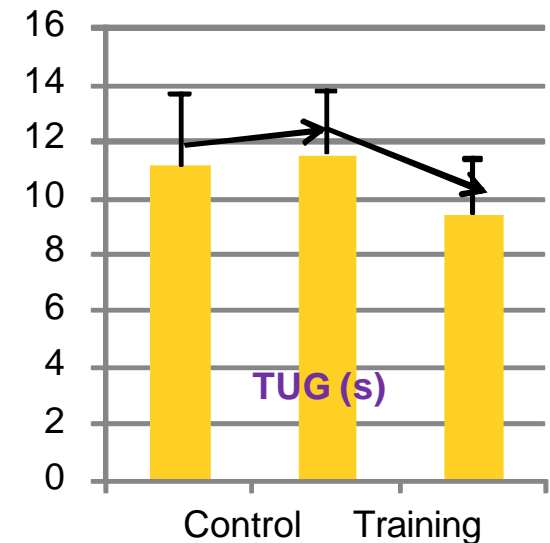
- Balance deteriorated during the control period
 - ? AREA $69 \pm 58\%$
 - ? VEL $44 \pm 49\%$
- Balance improved with Tai Chi
 - ? AREA $16 \pm 21\%$
 - ? VEL $31 \pm 37\%$





Results

- 6MW distance increased slightly following TC ($4 \pm 3\%$) but no change was observed during the control period ($0 \pm 3\%$, $p = .0629$).
 - There was no change in perceived exertion among all three 6MW tests ($p = .4413$).
- TC effectively reduced TUG time ($+5 \pm 12\%$ -control, $-18 \pm 9\%$ -TC, $p = 0.0061$).





Conclusion

- PN may lead to functional deterioration, especially to standing balance, in as little as 6 weeks
- Modified Tai Chi training can improve foot sole sensation, balance and functional mobility in this population.





Thank you

Any questions, suggestions and comments?